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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,641	06/14/2001	Michael R. Foster	DP-302459 (DEP-0147)	7263

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VINCENT A. CICHOSZ
DELPHI TECHNOLOGIES, INC.
Legal Staff, Mail Code: 480-414-420
P.O. Box 5052
Troy, MI 48007-5052

EXAMINER	
TRAN, HIEN THI	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/881,641	FOSTER ET AL.	
	Examiner	Art Unit	
	Hien Tran	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/18/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *21-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-30* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/14/01,9/24/01,2/*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-20 in the reply filed on 10/18/04 is acknowledged. The traversal is on the ground(s) that the claims have common features and should be examined together. This is not found persuasive because the apparatus as claimed in claim 1 can be made by another and materially different process, such as the one requiring an electrically insulating layer.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 21-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/18/04.

Drawings

3. The drawings are objected to because in Fig. 4 "42" (near the outlet 17) should be changed to --52--; in Fig. 5 "42" (near the inlet 15 and the outlet 17) should be changed to --52--; in Fig. 17 it is unclear as to whether reference numeral "38" is the same as to the spacer "38" in Fig. 3; in Fig. 16, it appears that the retaining device 108 is also pointed to the mat 16. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and

appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

Specification

5. The disclosure is objected to because of the following informalities:

On page 5, line 5 "12" should be changed to --18-- (note line 4).

On page 9, line 17 --or end-- should be inserted before "14" (note page 7, line 25); in lines 20, 21, 22 and 26 --portion-- should be inserted before "94" (note line 10).

On page 10, line 29 --or weak areas-- should be inserted before "40" (note page 6, lines 11-12).

Appropriate correction is required.

6. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 3-4, 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 3, 15, it is unclear as to what is intended by low or high retention force of said mat, how can the mat create such forces, whether such forces are inherent in any mat. Similar, it is unclear as to whether the weak side, medium and high strength areas are inherent in any substrate.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Foster (6,797,241).

With respect to claim 1, Foster discloses a non-thermal plasma reactor comprising:

a plasma-generating substrate 12, 14 having one or more flow paths for an exhaust gas;

a housing 38 having an inlet and an outlet;

a mat 24 retaining said plasma-generating substrate in said housing such that said one or more flow paths are in fluid communication with said inlet and said outlet; and

an electrically insulating layer 28, 31 disposed between said plasma-generating substrate and said housing for preventing an arc of electricity from said plasma-generating substrate and/or said voltage to said housing.

Note that a voltage is inherently supplied to said plasma-generating substrate for generating a plasma field (claims 1, 3, 10).

With respect to claim 5, Foster discloses that the insulating layer comprises a mica layer (claim 12)

Instant claims 1, 5 structurally read on the apparatus of Foster.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. The art area applicable to the instant invention is that of non-thermal plasma reactor.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicants and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what references alone teach (*In re Bode*, 193 USPQ 12, (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. *In re Clinton* 188 USPQ 365, 367 (CCPA 1976) and *In re Thompson* 192 USPQ 275, 277 (CCPA 1976).

14. Claims 2, 6-9, 13-14, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster (6,797,241) in view of Hemingway (6,464,945).

With respect to claims 2, 6, 8, 13, 18-19, the apparatus of Foster is substantially the same as that of the instant claims, but is silent as to the retaining device.

However, Hemingway discloses the conventionality of providing a retaining device or header 76, 78 for diffusing exhaust gas to the plasma-generating substrate and away from the mat, the retaining device being in close proximity to the flow paths.

It would have been obvious to one having ordinary skill in the art to provide a retaining device in the apparatus of Foster, so as to retain the substrate within the housing and direct the exhaust gas to the substrate as taught by Hemingway as such is conventional in the art and no cause for patentability here.

With respect to claims 7, 9, the specific distance from the retaining device to the flow paths is not considered to confer patentability to the claim. The precise distance from the retaining device to the flow paths would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed distance from the retaining device to the flow paths cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the distance from the retaining device to the flow paths in the system to obtain the desired retaining thereof (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

With respect to claim 14, Foster discloses an electrically insulating layer 28, 31 disposed between said plasma-generating substrate and said housing.

With respect to claim 17, Foster discloses that the insulating layer comprises a mica layer (claim 12).

15. Claims 10-12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster (6,797,241) in view of Hemingway (6,464,945) as applied to claims 1-2, 5-9, 11-14, 17-19 above, and further in view of Foster (6,159,430).

With respect to claims 10-12 and 20, the modified apparatus of Foster '241 is substantially the same as that of the instant claims, but fails to disclose peripheral extensions, sealant or seal ring.

However, Foster '430 discloses provision of peripheral extensions in close proximity to said inlet and outlet (col. 4, line 64 to col. 5, line 9); sealant 34 at the end of mat 32 (col. 5, lines 9-18) and annular end rings (col. 6, lines 34-40).

It would have been obvious to one having ordinary skill in the art to construct the substrate with peripheral extensions and sealant as taught by Foster '430 in the modified apparatus of Foster '241 so as to substantially shield the space surrounding the substrate and therefore to prevent the end of the mat from erosion by the hot exhaust gas.

It would have been obvious to one having ordinary skill in the art to provide annular end rings as taught by Foster '430 in the modified apparatus of Foster '241 for preventing movement of the mat material and providing a surface for the mat material to be compressed against.

Double Patenting

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1, 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,797,241 (Foster). Although the conflicting claims are not identical, they are not patentably distinct from each other because they are directed to the same conceptual invention.

18. Claims 2, 6-9, 13-14, 17-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,797,241 (Foster) in view of Hemingway (6,464,945).

The same comments with respect to Hemingway apply.

19. Claims 10-12, 20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,797,241 (Foster) in view of Hemingway (6,464,945) as applied to claims 1-2, 5-9, 11-14, 17-19 above, and further in view of Foster (6,159,430).

The same comments with respect to Foster '430 apply.

20. Claims 1-3, 13-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application No. 09/881,277. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are directed to the same conceptual invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claims 4, 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application No. 09/881,277. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are directed to the same conceptual invention.

The specific density of the mat is not considered to confer patentability to the claim. The precise density of the mat would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed density of the mat cannot be

considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the density of the mat in the system to obtain the desired retaining and insulating thereof (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

HT

Hien Tran
Primary Examiner
Art Unit 1764